Shake 4

Product Overview
May 2005

Contents

Page 3 **Introduction**

Page 4 **New in Shake 4**

Page 6 **Unified 2D/3D Compositing**
Node View Interface
2D/3D Compositing
Rotoscoping and Paint
32-Bit Keylight and Primatte
Truelight Monitor Calibration

Page 11 **Advanced Image Processing**
Optical Flow–Based Retiming
Smoothcam and Tracking
Shape-Based Morphing and Warping
AutoAlign

Page 13 **Editing and Effects Pipeline Integration**
Integration with Final Cut Pro 5
Free Distributed Rendering on Mac OS X

Page 15 **Open and Customizable Architecture**
Scripting
Open Architecture

Page 17 **Visual Effects Workflows**
Commercial Post-Production
Feature Film Production
Visual Effects Boutiques
Animation Houses

Page 20 **Technical Specifications**

Page 22 **Product Details**

Introduction

Used to create the world's most celebrated visual effects for film and television, Shake 4 is the only compositing software that delivers a complete and proven toolset for creating visually stunning content. Shake 4 is an affordable, high-quality post-production solution for studios of all sizes, ranging from individual artists to boutique operations to large visual effects facilities. It includes the following powerful features:

- **Unified 2D/3D compositing.** No other visual effects software delivers the complete set of tools required by individual artists and full facilities, including full 32-bit float Keylight and Primatte keyers, shape-based morphing and warping, and vector-based paint. Composite live action and 3D CGI layers with more realism using the new OpenGL-accelerated 3D multiplane compositing node in Shake 4.

  3D compositing is seamlessly integrated into the Node View to work with the same flexible user interface as every other operation. This modeless workflow means that compositing in 3D is as fast and high quality as the 2D operations. Create and animate multiple cameras or import Maya-compatible camera data for precise matching between 3D animation and live action. There is now a whole new dimension to the world's leading film and HD compositing software.

- **Advanced image processing.** Shake 4 leads the way in integrating the latest image processing technology into a single, affordable visual effects package. The optical flow technology in Shake 4 uses pixel-by-pixel image analysis to create smooth retiming, incredible high-quality resizing, and automatic stabilization. The results are cleaner, sharper, and more natural-looking images.

- **Editing and effects pipeline integration.** Shake 4 can now be directly launched from the Final Cut Pro 5 Timeline, making it easy for professional editors to enhance video segments with compositing.

- **Open and customizable architecture.** Extend the out-of-the-box feature set by using the internal C-like scripting language and macros in Shake 4 to create custom effects and functions. The open and extensible architecture makes Shake 4 completely customizable for large production pipelines by incorporating all of the Shake 4 commands through AppleScript, Perl, or other scripting tools. Shake 4 can be run from the interface or the UNIX Terminal, making it an excellent "Swiss Army Knife" suitable for compositors, 3D artists, and technical directors.

New in Shake 4

If you're already familiar with Shake, you can look forward to breakthrough new features in Shake 4, including:

Unified 2D/3D Compositing

The powerful compositing tools in Shake have been expanded in Shake 4 to make it easy to work with both 2D and 3D elements within the same intuitive user interface. Shake 4 also includes additional levels of quality and control for key aspects of compositing, including tracking, keying, and matte operations.

- **3D multiplane compositing.** Shake 4 offers the ability to composite unlimited layers in 3D space for seamless blending of live action and CGI. You can import Maya-compatible camera data or add camera animation in Shake. View top, side, front, and camera angles simultaneously for easier positioning of layers; get real-time feedback through the power of GPU acceleration.
- **Enhanced Node View.** The enhanced Node View in Shake 4 makes it possible to navigate composites in the Node View faster and with more extensive customization. Drag nodes over noodles for automatic insertion into a tree. Display color-coded data paths for different bit depths, Concatenation, Expression links, and animated nodes. You can even save Favorite Views that allow you to jump quickly to specific areas of a node tree.
- **Tracking on rotoshape points.** Previously, animating rotoshapes was a slow, manual process. Shake 4 makes it possible to automate rotoscoping tasks by attaching tracking points to control vertices. Create moving mattes by attaching trackers to points on a rotoshape. You can also use tracked shapes for creating masks or for moving warps and morphs.
- **32-bit Keylight and Primatte.** Shake 4 offers improved keying quality through the precision of full 32-bit floating-point processing. You can now use OpenEXR, Cineon, and DPX files for keying without clipping white values. Maintain 32-bit float film quality throughout the entire composite, or optimize performance by choosing 8-, 16-, or 32-bit processing.
- **Truelight monitor calibration.** Shake 4 makes it easy to ensure the look of the final film throughout your compositing process. With Truelight monitor calibration, you can previsualize film images on a computer screen. This allows you both to reduce workflow time and to save the cost of film outs. A Truelight node can be placed anywhere in the composite or as a viewer script; select from various film profiles or save facilitywide custom lookup tables.

New Image Processing Technology

Shake 4 uses the power and elegance of optical flow image processing to create stunning quality for retiming and resizing, shot stabilization, and panorama compositing.

- **Optical flow–based retiming.** Shake 4 makes it possible to create impressive, smooth slow motion through advanced optical flow technology. You can create extreme slow motion or speed up clips with incredibly smooth results because the adaptive algorithm of optical flow technology creates in-between frames as needed. Select preset standards conversion settings or arbitrarily ramp the speed of a clip.
- **Smoothcam.** The new Smoothcam feature in Shake 4 allows you to automatically stabilize a shot or smooth out a bumpy pan. Advanced optical flow technology analyzes the image with minimal user intervention. Remove camera jitter from static shots without setting tracking points; revive unusable shots by correcting uneven pans across a scene, with no need for tedious experimentation.
- **AutoAlign.** The AutoAlign feature in Shake 4 lets you automatically merge multiple images to create a single panorama. AutoAlign uses luminance matching as well as warping to stitch the images together into a seamless whole. Quickly and easily create large images for pan and scan; use frames from an image sequence to create a large clean plate.

Expanded Film and Video Integration

Visual effects are a key part of the workflow for commercial post as well as feature film and television production. New levels of workflow integration in Shake 4 have made the editing and effects pipeline even more efficient, while maintaining extraordinary image quality.

- **Integration with Final Cut Pro 5.** Automatically generate a Node View when you send cuts and layers from the Final Cut Pro 5 Timeline to Shake 4. Final Cut Pro editors can use Shake 4 to stabilize, resize, and retime clips with cinematic quality or composite the most difficult blue/green screen shots using the keying, paint, and rotoscoping features of Shake 4.
- **OpenEXR support.** Shake 4 allows you to import and export files using the emerging industry-standard OpenEXR image file format. OpenEXR is a 16-bit floating-point format that uses a higher dynamic range than 8- or 10-bit formats for greater quality. Take advantage of improved memory efficiency with this lossless compression format.

Improved Performance

Shake 4 has achieved even better levels of performance and efficiency through a new caching feature.

- **Cache node.** Shake 4 allows you to selectively cache portions of a node tree to memory. Create a memory or disk cache for selected areas in the Node View. The cached nodes are exposed and fully editable, so you can maintain complete flexibility. Further increase performance by calculating only the parts of the composite that change.

Unified 2D/3D Compositing

Shake 4 delivers the most efficient compositing operations for handling large images with pristine quality. Looking "under the hood" of Shake 4 provides a view of what makes it unique among visual effects compositing applications.

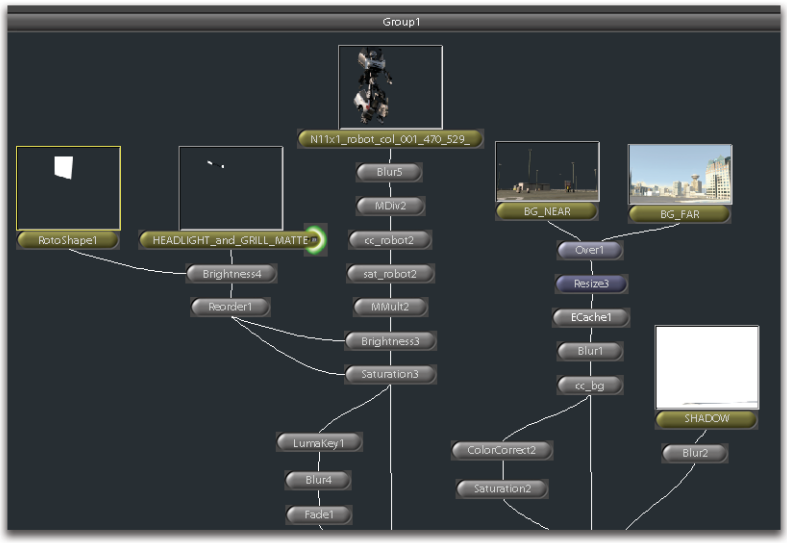
Node View Interface

Node-based compositing is more than just a view in Shake 4—it is the logic behind all the compositing operations. The Node View displays the network of linked functions that make up the node tree. Every effect in Shake 4 is a distinct node that can be inserted into a node tree. The Node View is used to select, view, navigate, and organize a composite. This allows artists to see the controls for functions in the context of a final composite.

In-context editing has two important benefits: modifying images upstream and having intuitive controls downstream. The user can easily go back to any operation and turn it on or off, or modify it in the context of the final composite. The Node View gives a very logical and graphic layout for the composite.

Because of the Node View, you can modify any part of your composite while viewing the entire composite. As you quickly view and select the controls for each node, you can modify them while looking at the final render.

A classic example is the ability to paint on a frame that is rotated in 3D space. The frame does not have to be viewed in a different window; the paint takes into account the rotation and perspective changes to provide a more intuitive view of your effect.



2D/3D Compositing

Shake has long been an industry favorite, in part because of its powerful, intuitive compositing engine. Shake 4 extends the speed and flexibility of the compositing engine to include the ability to composite both 2D and 3D elements within the same user interface.

Resolution independence
Most compositing applications can use various frame sizes in a single project and refer to that as "resolution independence." For Shake 4, resolution independence also means that you can change the resolution and bit depth during the compositing process, as many times and wherever you wish.

For example, you may output a film-resolution 32-bit plate and an 8-bit video-resolution image simultaneously. Shake 4 allows you to work in 8 bits, 16 bits, and 32 bits per channel, all within the same project.

The more bits you have in an image, the higher the quality level as you perform operations. However, the computation requirements are greater for higher bit depths, so you are trading off speed and quality.

Shake 4 offers the ability to change bit depth in the middle of a compositing tree. This allows the compositor to optimize the project, using 16- and 32-bit operations where needed while performing quick 8-bit operations as well.

Infinite Workspace
Clipped images can cause unpleasant surprises and time-consuming troubleshooting in the middle of a compositing workflow. Shake 4 offers an Infinite Workspace, which means that an image is never clipped, even if it goes outside of the frame.

In the example shown below, a simple twirl effect has been applied to an image. Scaling it down shows how clipping can occur in compositing applications that do not have an infinite workspace. Shake 4 allows the operation to expand outside the frame.

A twirl effect has been applied to the image.

Clipping occurs in most applications.

The Infinite Workspace in Shake 4 does not clip the image.

Domain of Definition

Visual effects are becoming more and more complex. More layers are being composited and frames are getting larger. Shake 4 uses a Domain of Definition (DOD) to identify the significant pixels in an image in order to optimize the speed of rendering effects and layering calculations. Everything outside of the DOD is considered as background (black by default) and is therefore ignored in most computations. The DOD is just one of the many extremely powerful ways that Shake 4 can decrease compositing and render times. The DOD can be set automatically by Shake 4, or you can refine the parameters if you wish.

Layering operations

Shake 4 offers 27 different compositing nodes located in the Layer tab to provide the utmost control and flexibility when compositing. The category includes primary compositing nodes ranging from Over and KeyMix to Boolean layering operators that add, divide, multiply, or subtract two images together.

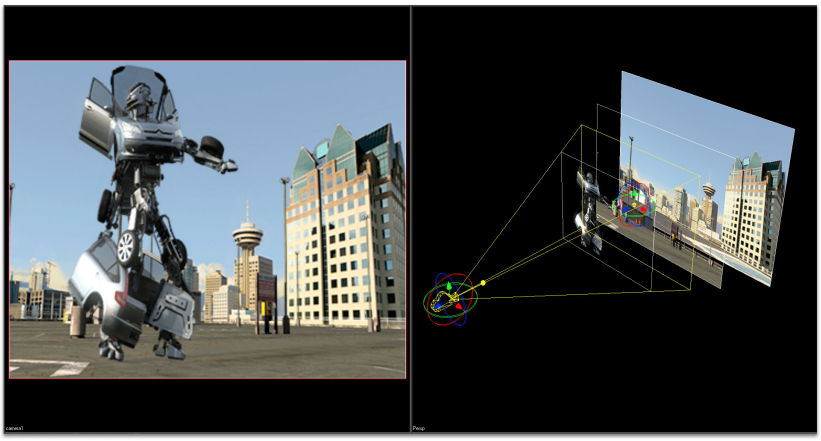
Shake 4 uses individual "atomic" nodes because they are useful for command-line compositing and scripting. These are also useful for the Node View in that the user can quickly see which type of operation is occurring.

A Layer node provides a single node with all the other compositing nodes built into it. It offers more flexibility, because you can easily switch between different layering operations without adding and deleting from the Node View. However, you have to open up the Layer node view to see which operations are being used to combine the different layers.

Both methods deliver equally pristine quality, so artists can choose the approach that best suits their compositing style.

3D multiplane compositing

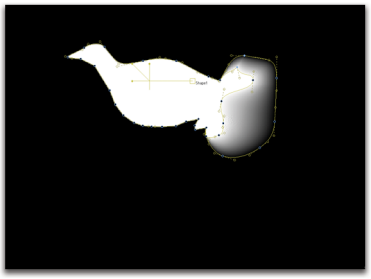
Although a lot of compositing can be handled in 2D space, more and more integration of CGI elements with live action footage makes 3D multiplane compositing critical. The new multiplane compositing in Shake 4 is integrated directly into the Node View, making it seamless to jump from 2D paint, rotoscoping, and image processing into a 3D layered composite. Adding a MultiPlane node allows the artist to "plug in" any number of layers to be composited in 3D space. CGI rendered elements can be perfectly matched into live action scenes when you import 3D tracking data from applications like Maya, Boujou, and The Pixel Farm. The layers remain highly interactive while you work, because the 3D MultiPlane node uses OpenGL hardware-accelerated previews.



Rotoscoping and Paint

Rotoscoping

In Shake 4, you can mask a layer or an effect to control which areas of an image are modified (like a bright color correction on a portion of the image). For sophisticated animations, each mask in Shake 4 can be keyframed, or each point on the rotoshape can be tracked, and a photorealistic motion blur can be applied. Multiple shapes can be created within one rotoshape node, while soft-edge falloff controls can be modified independently on each control point.



Paint

The Shake 4 QuickPaint node is a touchup tool that can fix problematic shots such as holes in mattes, or scratches and dirt on your images. It is a procedural paint system that allows you to change strokes after they have been placed. With QuickPaint, you can apply the effect and easily ignore it, remove it, or reorder it after you have applied your paint strokes.

Because QuickPaint is a vector-based procedural paint system, you can modify the current stroke or any previous paint stroke. You can also modify the paint characteristics (color, size, brush type, opacity, softness) or the position or shape of the stroke.

32-Bit Keylight and Primatte

Keying usually involves the extraction of a mask from a figure shot in front of a blue or green screen. This image can then be composited on top of a different background by removing the blue or green.

Shake 4 includes two industry-standard keyers, Primatte and Keylight, that operate with full 32-bit float precision to ensure the continuation of high bit depth throughout a project. Whereas other packages take a "one-keyer-does-all" approach to keying, Shake 4 allows you to combine keys to achieve the best results.

Shake 4 also includes tools for pulling keys based on luminance (brightness) and depth calculated by a 3D render.

Truelight Monitor Calibration

Truelight is a complete HD-to-film or film-to-film color management system from FilmLight, integrated directly into Shake 4 for previsualizing the look of projected film images on Apple LCD displays and CRT display devices. It allows compositors to use Truelight 3D Cube technology to accurately predict the look of their HD or film imagery when printed to film, without unnecessary film outs—thereby saving time-consuming matching and rework.

Truelight calibration nodes can be added anywhere within a Shake 4 compositing "tree" in order to accurately visualize an image at that point. The compositor can select which profile to use and can also easily bypass the Truelight operation. Truelight calibration can be used for visualization or rendered through into the final output image. Compositors can profile the current monitor using the Truelight node or optionally take advantage of the wider range of FilmLight hardware calibration products and services.

Advanced Image Processing

Shake 4 uses the power of optical flow image processing to create extraordinary image quality for retiming, shot stabilization, tracking, and more. Intuitive spline-based controls offer an unusual combination of flexibility and precision for warping and morphing.

Optical Flow–Based Retiming

Timing controls are important to speed up, slow down, or sync a clip in time. Shake 4 uses an advanced optical flow–based system for retiming shots. Optical flow is a sophisticated method of motion estimation that automatically tracks an image pixel by pixel in order to create "new" frames. The results are stunningly smooth slow motion effects at amazingly low frame rates.

Each clip in Shake 4 can be nonlinearly retimed, allowing the user to go backward and forward along a clip. For flexibility, this functionality is designed so that developers using third-party products like RE:Vision Effects and The Foundry's Furnace can use their own retiming routines for high-quality results.

Smoothcam and Tracking

Shake 4 includes different ways to stabilize a shot and match one element's movement to another. Stabilization is used to smooth out bumpy camera moves or eliminate camera movement altogether. Smoothcam is a new stabilization method in Shake 4 that uses optical flow technology to automatically remove camera jitter from static shots without setting tracking points. Artists can revive unusable shots by correcting uneven pans across a scene with minimal user intervention.

Shake 4 also includes powerful tracking technology that works by following the movement of pixels over a series of frames to create "motion paths" that other elements can be attached to. Placing a logo on the side of a moving truck is the classic example of how tracking is used. But the tracker in Shake 4 allows the user to define various parameters so that tracking even the most difficult of shots is automated. Because most movement occurs at the subpixel level, the tracker can sample down to subpixel accuracy. You can smooth a track, apply preprocessing, operate in various color modes, and even weight the color channels.

Shape-Based Morphing and Warping

The shape-based morphing and warping in Shake 4 can be used for fantastic shape shifting or seamless corrective effects. Integrated directly into Shake 4, morphing and warping shapes use standard spline tools. These tools make it more intuitive to create and modify an effect than mesh-based warping tools. Unlike hardware-based warping tools, Shake 4 uses high-quality software-based rendering for fine precision. Trackers can be applied to shapes to create moving morphs and warps more quickly, and the high-quality warping engine takes advantage of dual processors.

Shape-based morphing and warping (as opposed to mesh-based approaches) is based on the concept of using common roto tools to outline areas of an image you want to distort. Once you outline the interesting areas, you then create "destination shapes" that depict where you want the original outlines to end up. Although many people recognize morphing and warping as fantastic visual effects, morphing and warping are fundamental as corrective tools used on a regular basis.

AutoAlign

AutoAlign is a unique transform node that uses optical flow analysis to combine multiple source images into a single panorama. Images that overlap either horizontally or vertically are aligned, warped, and luminance-matched to create a single seamless output image—all without user intervention.

Unlike similar photographic tools, the AutoAlign node works with both stills and image sequences. As shown below, you could take three side-by-side shots or an expanse of action and later transform the shots into a single extremely wide-angle background plate.

Editing and Effects Pipeline Integration

Visual effects are a key component of film and television production workflows. One of the challenges comes from creating a seamless, efficient workflow with editing and other post-production operations. Shake 4 offers new levels of pipeline integration, as well as the ability to expedite rendering in order to avoid post-production bottlenecks.

Integration with Final Cut Pro 5

Now the leading film visual effects software can be combined with the world's leading nonlinear editing software for a powerful integrated pipeline for editing and effects. Cuts and layers from the Final Cut Pro 5 Timeline can automatically create a Shake 4 node tree. Shake 4 will automatically launch from the Final Cut Pro 5 Timeline, cutting down the need to re-create the edits and layers in Shake 4 from scratch. Use the powerful keying, retiming, rotoscoping, and paint tools in Shake 4 or quickly bring in one shot to stabilize it using Smoothcam. Once you finish, you can render using the distributed rendering feature in Shake 4 while you go back to Final Cut Pro 5 and continue editing.

Free Distributed Rendering on Mac OS X

It is common to have hundreds of frames to render, with each frame taking several minutes or even hours of rendering time. Rather than tie up the local machine to render a shot, the renders can be sent off to a render farm (Xserve cluster nodes). Distribution to a render farm can easily be done by any queue management software (such as Rush), but also by Apple Qmaster, included with Shake 4 for Mac OS X.

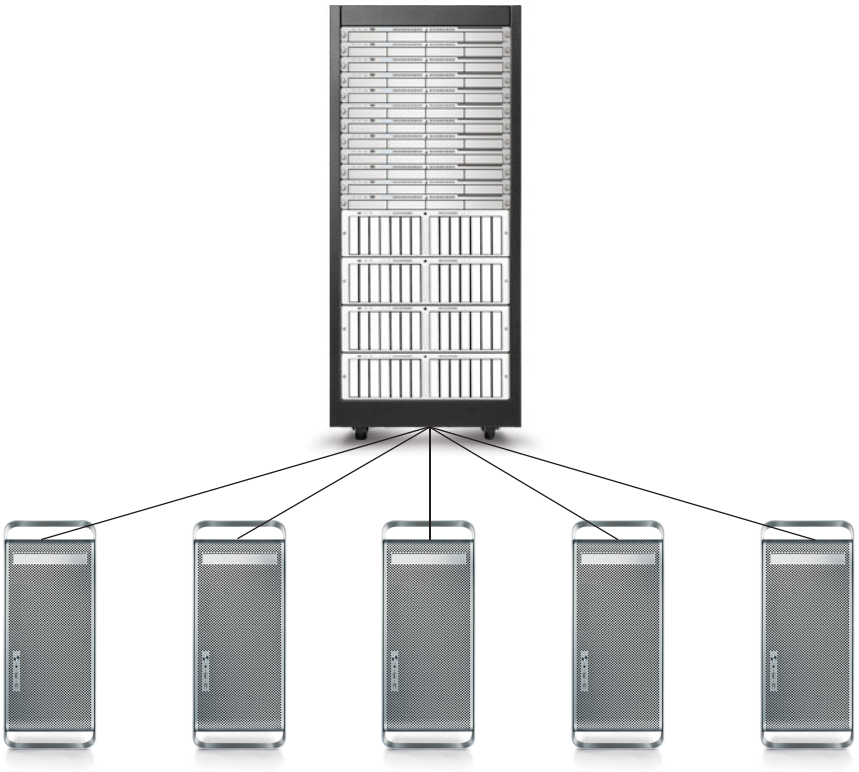
Quick clustering
In small shops that have one or two artists, managing the network rendering schedule is less of an issue. In fact, having to administer and configure a "quick cluster" of computers into a render farm is a hassle. Apple Qmaster can enable any computer on the network to be used as a render farm node at any time. This is perfect for systems that aren't used during the overnight hours. Just schedule them to become available at a certain time and you have created an "instant" render farm.

Auto-mount cluster storage devices
When a rendering task is distributed using any render queue software, disk storage must be shared by all the machines involved. This typically must be set up by the system administrator via AFP, NFS, or other network facility.

Setting up and administering cluster storage is not trivial. Apple Qmaster offers a way to mount the cluster storage device on all of the render nodes assigned to work on the job, thereby making it easier to set up and configure the render farm.

Distributed QuickTime rendering
Using Apple Qmaster, Shake 4 projects can distribute the rendering of a single QuickTime File Out Node. Apple Qmaster splits the file up for rendering and stitches it back together automatically, just as if the render had been executed on a single machine.

Job dependencies
Some rendering jobs depend on the results of previously rendered jobs being available. In many cases, users have to submit a job, wait for its successful completion, and then submit the dependent job. The ability to serialize jobs in Apple Qmaster allows users to specify which jobs should happen first. The Apple Qmaster Job Controller then takes care of proper execution timing.



Open and Customizable Architecture

Shake 4 supports the most complex workflows and sophisticated projects. Using the power of scripting, Shake 4 artists can control every parameter of the program to accomplish anything from creating custom effects to automating repetitive tasks.

Scripting

Shake 4 projects are called scripts because they are essentially text files saved out in ASCII format. Scripts are extremely flexible and easy to modify, even without launching Shake 4. For example, if a user has a very large script that looks at image A, but the 3D artist has just made a new version for that image, calling it image B, the user can simply open the script in a text editor and change the reference from image A to image B.

The script goes beyond just image pointers to providing a text-based command for every operation that exists in Shake 4. Most Shake 4 functions can be accessed directly in the Mac OS X Terminal application by typing in commands.

A simple command in the Terminal can quickly take a series of TIFF images, apply a mask, and place it over a background image for 35 frames. The result could launch into a RAM player, or the user could write the file out to disk. This scripting capability means that simple repetitive tasks can be done quickly without having to open up the application, import the images, create a tree, and then render.

Expressions
Any parameter in Shake 4 can be a mathematical expression that drives the modification or animation of other nodes. Expressions allow you to modify multiple parts of a composite simultaneously or create sophisticated animations that would otherwise be unrealistic to create by hand (for example, a random flickering on a function that controls brightness). Although not the most user-friendly part of any program, the ability to use expressions can save hours of time when modifying complex composites.

Macros
Creating custom effects doesn't have to require programming experience. Macros can be created inside the interface and modified by hand. Macros are created by combining Shake 4 nodes so they act as a single node that is compiled on the fly, which makes using them fast and flexible. The Shake 4 user community posts hundreds of macros at www.highend2d.com/shake that can be downloaded for free.

Open Architecture

For customers wanting to move beyond the rich toolset of Shake 4, an infinite level of customization is available through an open architecture. This customization often is a way for facilities to differentiate their capabilities and develop new visual effect techniques within a stable, high-performance environment.

Software developer kit (SDK)
For software developers or technical directors with some knowledge of C++, the extensive software developer kit (SDK) for Shake 4 can be used to create specific tools and effects. With access to almost every function in Shake 4, visual effects companies can integrate a broad range of workflow-specific features, new visual effects filters, or even entirely new modules.

Visual Effects Workflows

Shake 4 meets the needs of the most demanding workflows for film, television, and commercial post-production. The following descriptions detail Shake 4 workflows for the typical production environments, including:

- Commercial post-production
- Feature film production
- Visual effects boutiques
- Animation houses

Commercial Post-Production

Commercial post houses are the backbone of post-production, focusing on short-format televised content like commercials, music videos, and infomercials.

Commercial television projects demand that every part of a project—from editorial to animation and visual effects—be created with fast turnaround and high quality, sparing no expense. But while advertisers are paying less these days, commercial post-production companies are expected to deliver more. Post-production facilities need solutions that deliver top-quality visual effects, unique new looks, and fast results.

Shake 4 is an ideal solution for augmenting the huge hardware investments already in place in these facilities. It includes production-proven tools like Primatte and Keylight for creating high-quality keys, which can then be finished in Final Cut Pro 5 or a hardware-based finishing system. Shake 4 offers significantly higher quality than hardware-based systems for common compositing tasks like warping, resizing, retiming, and creating multilayered comps. The integration with Final Cut Pro 5 makes Shake 4 even more attractive to post houses looking for a flexible high-quality editing and effects solution.

Typical workflow for post-production facilities

1. Shoot/create content.
2. Edit with Final Cut Pro 5.
3. Generate CG elements and animations in a 3D application like Luxology modo.
4. Send Final Cut Pro 5 edits and layers to Shake 4.
5. Composite live action and CGI elements in Shake 4.
6. Go back to Final Cut Pro 5 for finishing.
7. Output to video, DVD, or the web.

Feature Film Production

Large facilities like Weta Digital, Tippett Studio, and Industrial Light & Magic invest millions of dollars in hardware and software to achieve the most productive work environment. These companies are involved in all aspects of a movie—from shooting to 3D animation to compositing to printing out on film.

The visual effects section of a film production company is typically a medium-size to large facility of 20 to 500 people, each working on a shot for a few days to a few weeks. For efficiency, tasks are broken down between 3D artists (to create elements to composite); compositors (to blend rendered or painted elements into a photographed plate); roto-artists (who carefully rotoscope out masks of people and objects); matte painters (who paint photorealistic backgrounds rather than build them in 3D); technical support (to write scripts and specialized code); and I/O people (to bring shots from a film scanner or send finished shots to a film printer). This task distribution requires a large network of machines that can easily talk to each other and share files and resources such as rendering machines and disk drives.

Such tasks require products that can handle very large projects while maximizing efficiency. Shake 4 responds well to those needs because it was created to work efficiently on very demanding film-resolution projects while maintaining an excellent price/performance ratio. It has the ability to tackle complex composites with unlimited layers and multiple simultaneous resolutions and bit depths, with an extremely powerful distributed render engine for fast local or networked image calculations.

Typical workflow for feature film production facilities

1. Scan film to a logarithmic file format, sometimes including HDR data like OpenEXR.
2. Create models and animation in 3D with a solution like Alias Maya.
3. Composite film footage and CG elements in Shake 4.
4. Send the end result to a film recorder.

Visual Effects Boutiques

Visual effects boutiques—like Embassy VFX in Vancouver, British Columbia or Furious FX in Burbank, California—are usually hired by the larger production houses to take over multiple shots within a project. They are highly specialized and work with a small team of talented artists and low overhead. Their success depends on their ability to keep overhead low and deliver finished shots on time without sacrificing quality. They need a solution to handle large projects very efficiently and affordably.

Shake 4 is the perfect solution for these boutiques. It is fast and high quality, and it has the flexibility to work well in a shop that needs to develop custom solutions. Shake 4 also has qualities that make it a great tool for filmmaking—for example, the ability to tackle complex composites with unlimited layers and multiple simultaneous resolutions and bit depths. It accepts numerous file formats for seamless integration with other products used on a project and includes an extensive array of tools to accomplish most types of effects.

Typical workflow for visual effects boutiques

1. Import film footage and CG elements.
2. Composite in Shake 4.
3. Work interactively on the project.
4. Render through any available machine on the network.
5. Send shots to studios or to an outsourced vendor for film print (output material to SD or HD using Final Cut Pro 5).

Animation Houses

Animation houses like Blue Sky or Luminetik invest considerable amounts of effort in developing an efficient 3D workflow. More and more, they are implementing efficient 2D compositing workflows that provide greater flexibility and speed. These companies are involved in all segments of the film and television industry, including feature films, television programming, and commercial work.

Shake 4 is ideal for such projects because entire workflows can be relatively automated using the Shake 4 scripting language. Also, Shake 4 was created to work efficiently on very demanding multilayered projects with 16- and 32-bit float processing, which is required by many animation houses. It accepts numerous file formats and camera data from the most popular 3D application packages, like Maya. It also includes an extensive array of tools to allow the user to accomplish most types of effects.

Shake 4 ships with Apple Qmaster render management software for Mac OS X, which can also manage the rendering from Maya. This combination is a perfect solution for animation houses, allowing them to maximize their hardware resources.

Typical workflow for animation houses

1. Create models and animation in 3D with a solution like Alias Maya or Luxology modo.
2. Output various render passes (shadow pass, specular pass, and so on) for greater control in compositing.
3. Import layers and camera data from animation software.
4. Send to render farm for calculation.
5. View results and tweak if necessary.

Technical Specifications

Compositing
- Process tree–based compositing
- Control over bit depth at a local node level
- Mix image resolutions within a composition
- 3D MultiPlane node with camera controls
- Import Maya-compatible camera tracking data
- Customizable quad split viewer
- Multi-input Layer node with blend modes
- Boolean and Image Math layer operations
- Import Photoshop layers with blend modes
- Fully editable node grouping/ungrouping
- Channel swapping and copying
- Constraint of any operation to channel, field, tolerance, or region
- External masking capabilities for every operator
- Audio scratch track support in Mac OS X
- Support for third-party plug-ins including The Foundry, GenArts, and RE: Vision Effects

Filters
- Film-grain simulation
- Extremely fast, high-quality Gaussian blurs
- User-definable Convolves
- Grain, Median, Sharpening, Embossing, Edge Detection, Radial Blur, and Z-Depth-based Blur
- Optical Defocus
- Dilation/Erosion
- Image-driven Blurring, Sharpening, or Dilation

Keying
- I32-bit Photron Primatte chroma keyer included
- 32-bit CFC Keylight chroma keyer included
- Chroma, Luma, Difference, or Z-Depth keying
- Spill-suppression

Color correction and channel manipulation
- Pixel Analyzer gathers image analysis data over multiple frames for use on color correction
- Curve-based color correction
- Color correction super node
- Color correction lookup table
- Extensive set of RGB, matte, Z-depth, and HSV based color correction tools
- Logarithmic/Linear color space conversion with per-channel roll-off controls
- Support for multiple color spaces including RGB, HSV, HLS, CMY, and YUV
- Video-legal color correction
- Concatenation of adjacent color corrections into one lookup table

Warps
- Shape-based warper and morpher nodes
- New Lens warp node
- Randomization and turbulence
- Twirl and Pincushion
- Image- and expression-based warping

Paint
- Procedural, pressure-sensitive vector-based paint
- Insert Paint nodes anywhere in the process tree
- Clone, reveal, and smudge paint modes
- Apply tracking data to paint strokes
- View paint strokes in context of transforms
- Switch interpolation modes at any time: single frame, persistent, and frame-to-frame interpolation

Animation
- Animate virtually any slider or toggle
- Flexible split-window animation curve editing
- Automatic or manual keyframing
- Copy/Paste keyframes
- View audio waveforms against animation curves
- Drive parameter animation based on audio
- Overlapping key controls for moving, interpolating, and replacing control vertices
- Curve controls for maintaining keyframe slopes and values over a range of frames
- Resample function
- Linking of any parameter to any other parameter
- Expressions on any parameter

Engine
- Optical flow–based retiming
- OpenEXR, Cineon, and DPX support
- 10-bit and 16-bit QuickTime support
- Apple Uncompressed 8- and 10-bit 4:2:2 support
- 15 other formats supported
- Support for custom file header metadata
- Hybrid tile-based, scan-line renderer
- True per-node control of bit depth, at 8, 16, or 32 bits per channel (float)
- Domain of Definition processing optimization
- Disk-based or on-the-fly proxy system
- Anamorphic image support
- Macro creation for frequently used operations
- Automatic persistent node caching
- C-like scripting language can make calls to any locally available shared programming library
- Built-in runtime compiler
- Built-in software-based GL-like renderer
- Software Developer Kit for software extensibility
- Command-line scripting access to all commands
- 100% software-based rendering for visually identical results cross platform
- Generation of anti-aliased text using TrueType and Adobe Type 1 fonts

Rotoscoping
- Multiple Bezier-style rotoshapes per node
- Independent animation control
- Nonuniform edge blurring
- Apply tracking data to rotoshapes and points
- Nonuniform, velocity-based motion blur
- Shape parenting

Transformations

- Infinite Workspace keeps elements and filters from being cropped when moved out of frame
- Pan, Rotate, Scale, Shear, and Corner Pin
- Tracker, Stabilizer, and Matchmove nodes
- New Smoothcam optical flow–based stabilization
- Tracker preprocessing to reduce inaccuracies
- New AutoAlign
- Optical flow–based resizing
- Concatenation of adjacent transformations into a single move, for speed and quality
- Per-transformation or global motion blur control
- Motion blur with shutter and quality control
- Apply motion blur initial frame setting
- Ability to control transformation order
- Inverse transformations
- In-context direct manipulation controls

Interface

- Preview composites on broadcast monitors using third-party supported Mac OS X hardware
- Onscreen manipulators for transformations
- Multiple resolution or channel viewers
- Integrated Truelight monitor calibration
- RAM FlipBook for viewing of compositing tree at any stage; FlipBook playback while rendering
- RAM FlipBook playback while rendering
- QuickTime disk-based FlipBook in Mac OS X
- Viewer-specific lookup tables
- In-viewer region of interest
- In-viewer image compare buffer

Apple Qmaster

- Network render management for Mac OS X
- Integrated UI for job creation and monitoring
- Integrated Maya rendering support
- Offloading processor-intensive tasks to other computers
- Create multiple "clusters" of Apple G4 and G5 computers for specific jobs, artists, or applications
- Fault-tolerant architecture ensures successful job completion and accurate results, even in the event of resource deallocation
- Optimized usage of network resources through load-balancing algorithms
- Compatible with third-party command-line rendering applications running on Mac OS X

Product Details

Price and Availability

The U.S. retail price of Shake 4 is $2999. An upgrade version is available for $999. Contact your authorized Apple representative for education prices.

Shake 4 is available worldwide in English. It can be purchased from the Apple Store online (www.apple.com/store), Apple Authorized Resellers, and Apple retail stores.

Shake 4 for Mac OS X is available as a single-workstation license or a floating network license. Shake 4 for Linux is available only as a floating network license.

Minimum System Requirements

Mac OS X

- Power Mac G5; or Power Mac G4 or PowerBook G4 with 1GHz or faster PowerPC G4 processor
- Mac OS X v10.3.9 or later
- QuickTime 7 or later
- 512MB of RAM or more
- 1GB of available disk space for caching and temporary files
- AGP graphics card with at least 32MB of video memory and OpenGL hardware acceleration
- Display with 1280-by-1024-pixel resolution and 24-bit color
- Three-button mouse
- Optional: AJA Kona or Blackmagic DeckLink card required to preview composites on a broadcast video monitor

Linux

- 1GHz Pentium III, Pentium 4, or AMD Athlon processor or faster
- Red Hat Linux 9
- 512MB of RAM or more
- 1GB of disk space for caching and temporary files
- Workstation-class graphics card, such as NVIDIA Quadro2 or Quadro4
- Display with 1280-by-1024-pixel resolution and 24-bit color
- Three-button mouse

Support

Apple offers the following support options for purchasers of Shake 4:

- **90 days of complimentary telephone support.** Shake 4 comes with 90 days of complimentary telephone support for basic troubleshooting, installation, and launch issues.
- **Annual support.** The purchase of an annual support contract gives you access to email support from Shake experts during business hours.
- **Per-incident support.** For more complex integration and troubleshooting issues, per-incident support can be purchased.

Highend2d.com/shake is a dedicated online forum where Shake 4 artists can ask questions of other Shake 4 artists and exchange custom effects.

Tutorials

Comprehensive tutorial materials, ranging from lessons for beginners to in-depth projects for experienced users, are included with Shake 4. The tutorials consist of detailed instruction in a printed manual as well as media assets included with the application.

Training

The Apple Pro Training Program is designed to keep you at the forefront of Apple's digital media technology while giving you a competitive edge. Whether you are an editor, graphic designer, sound designer, web developer, special effects artist, or teacher, these training tools are meant to help you expand your skills.

Take instructor-led classes at an Apple Authorized Training Center
There are more than 125 Apple Authorized Training Centers worldwide. For more information, visit www.apple.com/software/pro/training.

Use self-study courses from the Apple Pro Training Series
The official Apple Pro Training Series courseware is published by Peachpit Press. For more information, visit www.peachpit.com.

Become an Apple Certified Pro
Upon completion of the course material, students can become an Apple Certified Pro by taking the certification exam at an Apple Authorized Training Center. For details, visit www.apple.com/software/pro/training.

For More Information

For more information about Shake 4, visit www.apple.com/shake.

© 2005 Apple Computer, Inc. All rights reserved. Apple, the Apple logo, Final Cut Pro, Mac, Macintosh, Mac OS, PowerBook, Power Mac, QuickTime, Shake, TrueType, and Xserve are trademarks of Apple Computer, Inc., registered in the U.S. and other countries. Apple Store is a service mark of Apple Computer, Inc., registered in the U.S. and other countries. Adobe is a trademark or registered trademark of Adobe Systems Incorporated in the U.S. and/or other countries. OpenGL is a registered trademark of Silicon Graphics, Inc. PowerPC is a trademark of International Business Machines Corporation, used under license therefrom. Other product and company names mentioned herein may be trademarks of their respective companies. May 2005 L309522A